

REMARKS

Applicants respectfully request reconsideration of this application, and reconsideration of the Office Action dated September 26, 2005. Upon entry of this Amendment, claims 1-6, 8-11 and 13, 14 and 16-23 will remain pending in this application. The amendments to the claims are supported by the specification and original claims. No new matter is incorporated by this Amendment.

Applicants gratefully acknowledge the Examiner's continued confirmation that claims 18 and 20-23 are allowable.

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Claims 1-3, 5, 14, and 16 are rejected under 35 U.S.C. §103(a) as purportedly obvious based on Mitsuda et al. (U.S. Pat. No. 6,327,407) in view of Chua et al. (U. S. Pat. No. 5,519,526) and Ozawa (U.S. Pat. No. 5,960,135) or Hauer et al. (U.S. Pat. No. 5,696,862).

Claims 4, 6, and 17 are rejected under 35 U.S.C. §103(a) as purportedly obvious based on Mitsuda et al. in view of Chua et al. and Ozawa or Hauer et al., and further in view of Takahashi (U.S. Pat. No. 6,215,917).

Claims 8-11, 13, and 19 are rejected under 35 U.S.C. §103(a) as purportedly obvious based on Mitsuda et al. in view of Chua et al. and Ozawa or Hauer et al., and further in view of Okada et al. (U.S. Pat. No. 6,567,590).

These three rejections are addressed together as similar issues apply to all three. Features of original claims 14 and 15, as well as additional features, have been incorporated into independent claims 1 and 2. In view of the amendments to each of claims 1 and 2, withdrawal of each rejection is respectfully requested.

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Independent claims 1 and 2 (from which the other claims all depend) both now describe Applicants' optical receiver as including a back-illuminated PD provided with a p-electrode being wire-bonded. To the contrary, in Mistuda et al., the PD is electrically connected to the patterned electrodes on the substrate through bumps. In this prior art arrangement, it is necessary to form the bumps and the p- and n-electrodes of the PD on the same face. Applicants submit that this is difficult, and therefore they have developed their wire bonded arrangement omitting such bumps. Mitsuda et al. do not teach or suggest Applicants' PD bonding arrangement. None of Chua et al. and Ozawa, or Hauer et al. remedies this deficiency of Mitsuda et al. with respect to claims 1 and 2. This is a first reason that the asserted combination of cited patents fails to teach or suggest Applicants' arrangement of claims 1 and 2.

Next, claims 1 and 2 now recite an optical pathway-changing groove that is formed on the substrate and that has a reflecting face for reflecting light having passed through the wavelength-selecting filter into the PD, the PD being located on the substrate so as to be positioned directly above the reflecting face. In Applicants' receiver, light having emerged from the waveguide passes through the wavelength-selecting filter and the optical pathway-changing groove to enter the PD. Applicants' structure separates the functions of wavelength selection and light reflection without increasing the number of components necessary in the receiver. Therefore, the position of the filter in Applicants' receiver is flexible.

From the Office Action, it is understood that the Examiner regards the optical pathway-changing groove of the present invention as shown by structure 101a in Fig. 14 in Mitsuda et al. However, the element indication 101a in Fig. 14 is a groove for fixing a fiber. It is not an optical pathway-changing (groove). In the structure disclosed by Mitsuda, light emerging from the fiber is reflected from the wavelength-selecting filter to enter the PD. Mitsuda et al. thus also fail to teach or suggest Applicants' recited pathway-changing groove.

Hauer does not remedy the deficiency of Mitsuda et al. with respect to Applicants' pathway-changing groove. Hauer shows an example in which a filter is placed at an endpoint. However, there is open space between the filter and such endpoint. This creates a drawback in that the beam spreads out and thereby can cause errors in the wavelength selectivity of the filter. On the other hand, in the present invention, because Applicants permit no intervening space, they achieve wavelength separation without the beam spreading out. Hauer simply does not teach or suggest arranging the filter without the intervention of a space in order to prevent a beam of light from spreading out, as required in the present invention. For at least these further reasons, claims 1 and 2 are submitted as patentable over the asserted combined patents.


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Applicants respectfully submit that this Amendment and the above remarks obviate the outstanding rejections in this case, thereby placing the application in condition for immediate allowance. Allowance of this application is earnestly solicited.

If any fees under 37 C.F.R. §§1.16 or 1.17 are due in connection with this filing, please charge the fees to Deposit Account No. 02-4300; Order No. 033035.083.

If an extension of time under 37 C.F.R. §1.136 is necessary that is not accounted for herewith, such an extension is requested. The extension fee should be charged to Deposit Account No. 02-4300; Order No. 033035.083.

Respectfully submitted,
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